

REMARKS

Claims 1-35 have been examined. Applicant is adding new claims 36-39. Claims 1-39 are all the claims pending in the application. The examiner has indicated that claims 7-10 and 17-20 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

Applicant appreciates the examiner setting forth a Response to Arguments beginning on page 14 of the Office action. Applicant has considered the examiner's grounds of rejection and Response to Arguments in the Office action. Applicant provides the following reply.

Rejection of Claims 1-4, 11-14, 21-24, 26-28 and 30-35 under 35 U.S.C. § 102(e) - Miller

The examiner has rejected claims 1-4, 11-14, 21-24, 26-28 and 30-35 under 35 U.S.C. § 102(e) as allegedly being anticipated by *previously cited* U.S. Patent No. 5,731,823 (hereinafter Miller). Applicant respectfully traverses this rejection.

A. Independent Claim 1

With respect to claim 1, the examiner alleges that "Miller teaches a printer control circuit, (controller 30, column 4, line 43) which is a dedicated printer control hardware circuit between an upper apparatus (host computer, column 4, lines 45-50) and a printer, the printer connected with the controller 30, figure 1)." (page 2, lines 3-6 of paragraph 2 of the Office action).

The allegedly corresponding controller 30 of Miller is part of the printer and is not a "dedicated control hardware circuit disposed between an upper apparatus and a printer," as

recited in claim 1. Rather, the controller 30 of Miller is disposed within the printer and is part of the printer.

As shown in Figure 1 of Miller, the allegedly corresponding printer controller 30 is located within chassis 12. (Col. 3, lines 25-26). Miller describes that a “typical inkjet printer 10 includes a chassis 12.” (Col. 3, line 2). Accordingly, the allegedly corresponding printer controller 30 is disposed within and is a part of the printer 10 of Miller.

Additionally, Miller describes the flow chart 50 illustrated in Figures 3A and 3B. In particular, Miller states that “[t]hese steps may occur in a printer driver (not shown) residing in the host computer, in the software contained in the printer 10, in the printer hardware itself, or in any combination of these locations.” (Col. 4, lines 47-50)(Emphasis added).

It is clear from the above, that Miller is simply stating that the only two locations where the steps of flow chart 50 can be performed is either in the printer or in the host computer. Miller fails to disclose the printer control circuit of claim 1, which is separate and distinct from the printer and host computer.

Also, taking the broadest interpretation of Miller, each step of flow chart 50 could be executed alternately between the printer or the host computer (i.e., step 104 at the host computer, step 68 at the printer, step 72 at the host). However, even if, assuming *arguendo*, that Miller discloses such an execution of those steps, Miller fails to disclose, teach or suggest the image completion circuit of claim 1.

Turning the examiner’s attention to the examiner’s Response to Arguments on page 14, lines 6-15 of paragraph 8. Regardless of whether, for example step 68 of Miller is executed by the host computer or the printer, there is nothing taught or suggested by Miller that a portion of

the page image (e.g., first image element) is converted into low-resolution raster data at one location (e.g., at the printer) and another portion of the same page image (e.g., second image element) is converted into low-resolution raster data at another location (e.g., at the host computer). Rather, the entire page image is converted into low-resolution raster data, at step 68, at one location, which would be either at the printer or the host computer. (Col. 5, lines 45-46).

While the examiner alleges that “the halftoning process of Miller, (104,68 72, fig. 3B) is a process of converting high resolution pixel values to low resolution pixel values,” (page 14, lines 9-11 of paragraph 8 of the Office action) this characterization of Miller is incorrect. The halftone process of Miller where high-resolution raster data is converted to low-resolution raster data occurs at step 68 only. (Col. 5, lines 45-53).

Miller states that the “output of step 104 is provided as a halftoning control signal 106 to the halftoning step 68.” (Col. 8, lines 56-57). (See also, col. 9, lines 27-38 of Miller). As shown in Figure 3B, step 104 is the generation of “control halftoning parameters” that includes the output of halftoning control signal 106. However, Miller is silent as to halftoning a portion of the page image 42 at step 104. Accordingly, the examiner has misinterpreted Miller and has read limitations in the Miller reference that are not disclosed.

Applicant submits that the halftoning occurs at step 68 for the entire page image and that the halftoning control signal output to step 68 from step 104 merely permits a “different technique” of halftoning to occur for different portions of the entire page. While, Miller describes that “[s]tep 104 may accomplish this by digitally halftoning the image 42 using the appropriate halftoning technique for each region of the page.” (Col. 9, lines 31-34)(Emphasis added). It is clear, that step 68 accomplishes the halftoning (i.e., converting of high to low

resolution raster data) of image 42 by different techniques by receiving the halftoning parameters from step 104. (See col. 9, lines 21-51 describing resolution enhancement and smoothing of step 104; compare control signal 90 and rasterizing step 60 at col. 7, lines 58-64).

Step 104 does not convert high-resolution raster data to low-resolution raster data. Further, even assuming *arguendo*, that raster data is converted from high to low at step 104, Miller discloses that each region of the page is halftoned, that is, the entire page is halftoned and not just a portion thereof.

Accordingly, Miller fails to disclose that a portion of the image 42 is converted into low-resolution data at one location (e.g., the controller 30 printer) and that the host transmits low-resolution data to the printer for another portion of the image 42. Figure 2 of Miller illustrates image 42 (i.e., the entire page) that includes the allegedly corresponding first and second image elements.

In contradistinction, the “complete print image” of claim 1 includes the first image element and the second image element, whereby the first image element is converted to first low-resolution raster data at the printer control circuit and the second low-resolution raster data is transmitted from the upper apparatus. Miller fails to disclose these features.

For at least these reasons, applicant respectfully requests that the rejection of claim 1 be withdrawn. Claims 2-4, 7-10 and 31 are patentable at least by virtue of their dependency on claim 1, as well as reciting their own patentably distinct features.

Additionally, with respect to claim 31, applicant submits that col. 4, lines 45-50 fails to teach or suggest that the second low-resolution raster data for a second image element is generated by performing a halftone process in the upper apparatus. As state above, Miller fails

to disclose that the upper apparatus performs halftoning for one portion of the image 42 (i.e., the second image element) and transmits the second low-resolution raster data to the image completion circuit and transmits high-resolution raster data for the first image element to the halftoning circuit, where the halftoning circuit converts the high-resolution raster data to first low-resolution raster data.

B. Independent Claim 11

The distinguishing features discussed above with respect to claim 1 are present in claim 11. The printer of claim 11 includes an image completion circuit that receives first low-resolution raster data from the halftoning circuit of the printer for the first image element and receives second low-resolution raster data from the upper apparatus for the second image element. Miller fails to disclose these features.

Notwithstanding, claim 11 includes a distributor which receives the image data from the upper apparatus and distributes high-resolution raster data to a halftoning circuit and low-resolution raster data to an image completion circuit. Miller fails to disclose, teach or suggest this feature of the printer of claim 11. There is nothing in Miller that corresponds to the claimed distributor.

For at least these reasons, applicant respectfully requests that the rejection of claim 11 be withdrawn. Claims 12-14, 17-20 and 32 are patentable at least by virtue of their dependency on claim 11, as well as reciting their own patentably distinct features.

Additionally, with respect to claim 32, applicant submits that col. 4, lines 45-50 fails to teach or suggest that the second low-resolution raster data for a second image element is

generated by performing a halftone process in the upper apparatus. (See discussion of claim 31 above).

C. Independent Claim 21

The distinguishing features discussed above with respect to claim 1 are present in claim 21. The printing system of claim 21 includes an upper apparatus, a printer and a dedicated printer control hardware circuit located between the upper apparatus and printer. The dedicated hardware circuit is separate and distinct from the upper apparatus and/or the printer. Further, Miller fails to disclose the image completion circuit of claim 21.

For at least these reasons, applicant respectfully requests that the rejection of claim 21 be withdrawn. Claims 22-24 and 33 are patentable at least by virtue of their dependency on claim 21.

Additionally, with respect to claim 33, applicant submits that col. 4, lines 45-50 fails to teach or suggest that the second low-resolution raster data for a second image element is generated by performing a halftone process in the upper apparatus. (See discussion of claim 31 above).

D. Independent Claim 26

The distinguishing features discussed above with respect to claim 1 are present in claim 26. The upper apparatus output high-resolution raster data for a first image element and low-resolution raster data for which halftoning has been processed for a second image element.

For at least these reasons, applicant respectfully requests that the rejection of claim 26 be withdrawn. Claims 27-28 and 34 are patentable at least by virtue of their dependency on claim 26.

Additionally, with respect to claim 34, applicant submits that col. 4, lines 45-50 fails to teach or suggest that the second low-resolution raster data for a second image element is generated by performing a halftone process in the upper apparatus. (See discussion of claim 31 above).

E. Independent Claim 30

The distinguishing features discussed above with respect to claim 1 are present in claim 30. The computer-readable recording medium of claim 30 recites that the computer output high-resolution raster data for a first image element and low-resolution raster data for which halftoning has been processed for a second image element.

For at least these reasons, applicant respectfully requests that the rejection of claim 30 be withdrawn. Claim 35 is patentable at least by virtue of its dependency on claim 30.

Additionally, with respect to claim 35, applicant submits that col. 4, lines 45-50 fails to teach or suggest that the second low-resolution raster data for a second image element is generated by performing a halftone process in the upper apparatus. (See discussion of claim 31 above).

Rejection of Claims 5, 6, 15, 16, 25 under 35 U.S.C. § 103(a) - Miller and Schoon

The examiner has rejected claims 5, 6, 15, 16 and 25 under 35 U.S.C. § 103(a) as

allegedly being unpatentable over Miller as applied to claims 1, 11 and 21 above, and further in view of *previously cited* U.S. Patent No. 4,857,904 (hereinafter Schoon). Applicant respectfully traverses this rejection.

Applicant notes that Schoon fails to cure the deficiencies of Miller with respect to independent claims 1, 11 and 21. Indeed, the teachings of Schoon are inapplicable to the deficiencies discussed above with respect to Miller.

Miller and Schoon, individually or in combination, fail to teach or suggest independent claims 1, 11 and 21. Therefore, claims 5-6, 15-16 and 25 are patentable at least by virtue of their dependency.

Rejection of Claim 29 under 35 U.S.C. § 103(a) - Miller and Furuya

The examiner has rejected claim 29 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miller as applied to claim 26, and further in view of *previously cited* U.S. Patent No. 6,304,335 (hereinafter Furuya). Applicant respectfully traverses this rejection.

Furuya fails to cure the deficiencies of Miller with respect to claim 26, as discussed above. The teachings of Furuya are inapplicable. Accordingly, Miller and Furuya, individually or in combination, fail to render obvious claim 26. Claim 29 is patentable at least by virtue of its dependency on claim 26, as well as reciting its own patentably distinct features.

Additionally, applicant provides the following supplemental remarks.

Col. 7, lines 6-7 of Furuya describes “sequential transmission of pages of encoded image data from host computer 1 to printer 100.” “The page of encoded image data is divided into blocks (e.g., 1st block, 2nd block, 3rd block, etc.).” (Col. 7, lines 11-12). “The blocks of encoded

image data are then sequentially transmitted from host computer 1 to reception unit 5 in controller 2.” (Col. 7, lines 12-14).

The general proposition of sequentially transmitting image data, fails to teach or suggest sequentially transmitting “high-resolution raster image data” for said “first image element” and “low-resolution raster data” for said “second image element.” Indeed, Furuya describes segmenting image data because it provides that a large page of encoded image data can be stored, block-by-block, in the printer’s reception buffer. (Col. 2, lines 17-21). Accordingly, Furuya fails to teach any relationship between the type of data and segmentation thereof (i.e., first image element or second image element) and the sequentially transmitting of image data.

Additionally, even if, assuming *arguendo*, that the combination of Miller and Furuya, teach or suggest this aspect of claim 29, the block start command 32 and job end command 34 of Furuya (col. 8, lines 1-10) fail to teach, suggest, or correspond to the claimed transmitting a raster end command for instructing raster termination of a pertinent image element when a first or second image element is not available. (Emphasis added). The examiner has completely ignored the specific limitations of the claim and the grounds of rejection are deficient in establishing that this aspect of Furuya combined with Miller, teach or suggest the above-mentioned limitation.

Even if, assuming *arguendo*, that a skilled artisan had combined this aspect of Furuya with Miller, the result would not have yielded or rendered obvious the upper apparatus of claim 29. Rather, the combination would have yielded an end command transmitted when the entire

page image 42 of Miller had been transmitted and not when the first or second image element is not available. There is no teaching in Miller and/or Furuya as to this condition.

Finally, the examiner's alleged motivation to modify Miller cannot be objectively traced from Miller and Furuya, individually or in combination. Indeed, the examiner sets forth the benefits that arise from the aspects recited in claim 29, which are apparent only after the invention is known, and alleges that these are the reasons to provide the specific invention claimed. Indisputably, the examiner is relying on *impermissible* hindsight.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.


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Respectfully submitted,

A handwritten signature in black ink, appearing to read "David A. Sumy", written over a horizontal line.

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